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Agriculture in THE UNITED STATES and THE SOVIET UNION



ABSTRACT: Farm efficiency, measured in terms of output per unit of input, is substantially higher in the United States than in the U.S.S.R. for land, livestock, and labor. The United States has better agricultural resources, has made more capital inputs, and has achieved greater crop yields and livestock productivity. Soviet agricultural output is only about 80 percent of U.S. production. The United States produces much more meat, eggs, fruit, corn, and soybeans than does the U.S.S.R. On the other hand, Soviet production of milk, wheat, rye, barley, potatoes, and sunflowerseeds greatly exceeds that of the United States.

KEY WORDS: Agriculture, Production, Trade, United States, Soviet Union, Crops, Livestock, and Inputs.

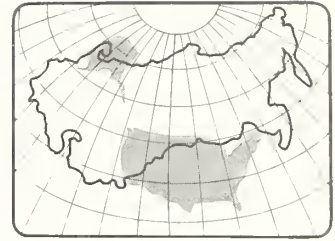
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SUMMARY



Although in many areas of agriculture, the wide gap between the U.S.S.R. and the United States has narrowed, we are still far ahead in farm efficiency, crop yields, and livestock productivity.

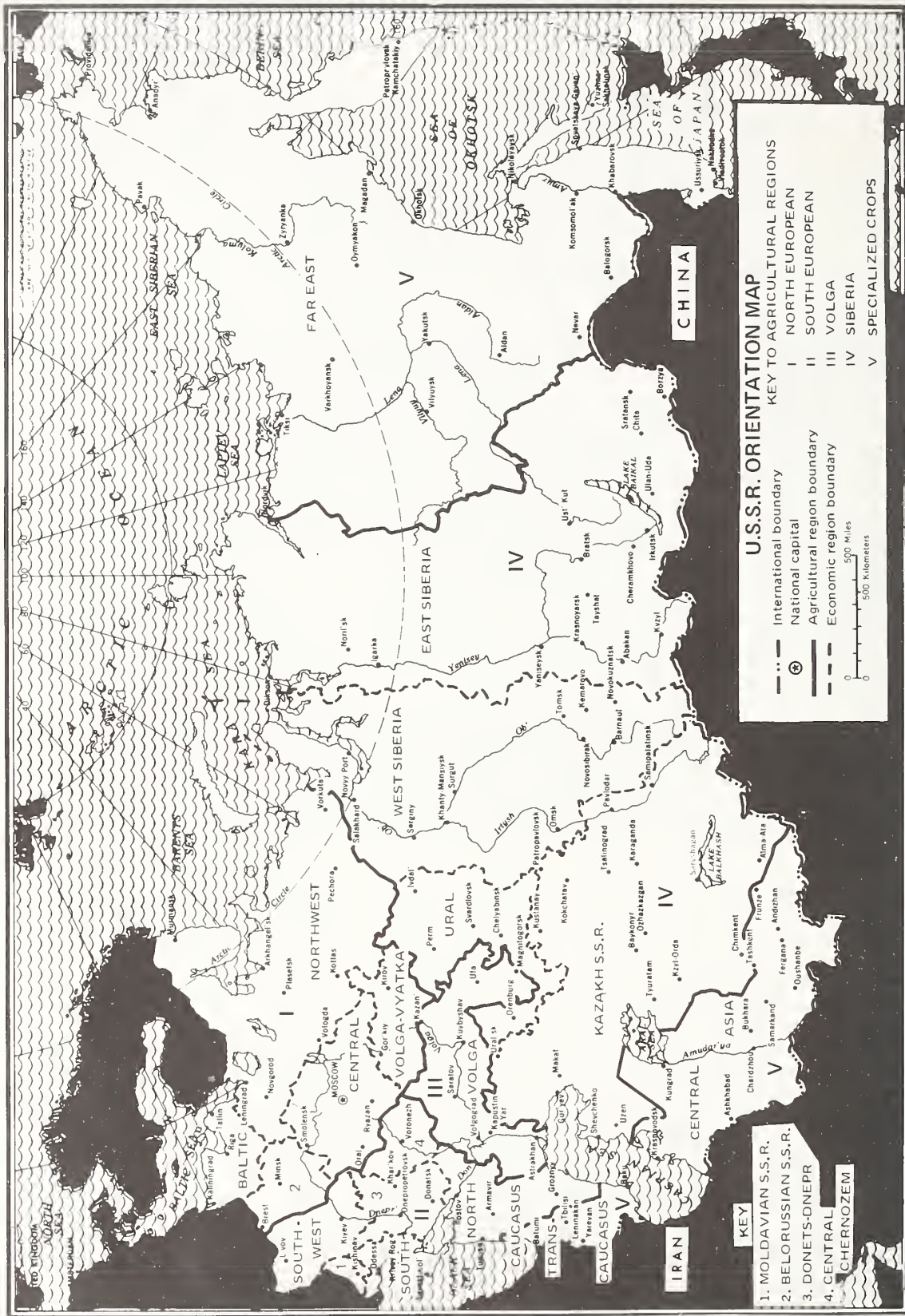
Farm efficiency, measured in terms of output per unit of input, is substantially higher in the United States for land, livestock, and labor. Historically, the United States has invested more capital in agriculture than the Soviets and has achieved greater output.

Despite greater inputs of land and labor, the value of Soviet agricultural output is roughly 80 percent of U.S. production. Soviet cultivated land area—560 million acres—is 45 percent larger than U.S. cultivated area. Also, over a fourth of the Soviet labor force (which is about 50 percent larger than the U.S. labor force) is engaged in agriculture, compared with a U.S. average of only 4 percent.

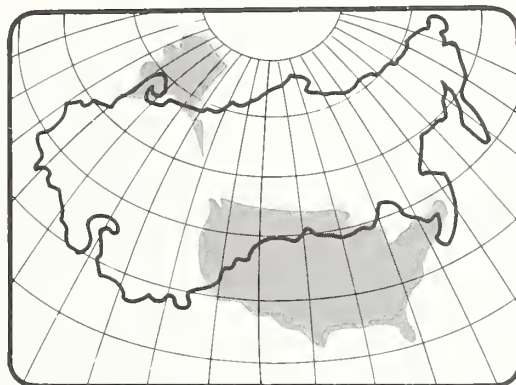
The Soviet Union lags far behind in agricultural inputs of fertilizer and equipment. The Soviets use about 57 percent as much nitrogen per acre of arable land and about 64 percent as much phosphate. Also, they have one tractor for every 265 acres of cultivated land, while we have one for every 88 acres. For grain combines, there is a similar situation.

The United States produces much more meat, eggs, fruit, corn, and soybeans than does the USSR. On the other hand, Soviet production of milk, wheat, rye, barley, potatoes, and sunflowerseeds greatly exceeds that of the United States.

The relative importance of agricultural products in the foreign trade of both countries is roughly the same—almost one-sixth. However, the United States traditionally is a net exporter of agricultural products, and the Soviet Union is a net importer.



Agriculture in THE UNITED STATES and THE SOVIET UNION



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INTRODUCTION

This study compares the agriculture of the United States and the Soviet Union by using recent statistical information on agricultural resources, structure, resource allocation, and output. It updates an earlier publication of the same title (13).¹ The tables in this report provide a comparison of acreage, yield, and production of various grains, grain utilization, output of other agricultural crops, livestock numbers, livestock product output, selected agricultural inputs, and agricultural trade of the two countries. Where pertinent, 5-year averages have been used to minimize the

effect of weather on the agricultural comparisons. Comparisons of soils, crop varieties, livestock breeds, agricultural science and technology, and institutional and political factors are not included in this study, but their effects are reflected, although not directly, in the results presented in the comparative tables.

The comparisons made in this study provide, at best, only general measures of agricultural performance of the United States relative to that in the Soviet Union. Such comparisons between countries are subject to inaccuracies attributable to a number of factors, some of which are: (1) differences in definition of terms; (2) insufficient data; and (3) inability to make relevant quality comparisons.

¹Italicized numbers in parentheses refer to items in References at the end of this report.

A difference in definition of terms can be found in grain yield and production data. Soviet statistics report grain yields and production in terms of "bunker weight"—the weight of the grain as it comes from the combines. Thus, Soviet yield and production data do not represent grain of a standard moisture and foreign matter content, but rather represent grain containing varying amounts of moisture and foreign matter, depending mainly upon weather conditions during harvesting. Soviet officials have indicated that harvesting conditions in the USSR probably result in an average of

about 5 percent of excess moisture and foreign matter in their grain. However, in dry years the grain probably contains little, if any, excess moisture and foreign matter, while in years when there is a lot of precipitation during harvesting excess moisture and foreign matter probably equals 10 percent or somewhat more of grain production. In this report, nevertheless, the official bunker weight for Soviet grain yield and production is used, but excess moisture and foreign matter are taken into account when grain utilization is analyzed.

AGRICULTURAL RESOURCES

Land and Climate

The Soviet Union is not as richly endowed with agricultural resources as the United States. The total land area of the U.S.S.R. is 5.5 billion acres, about 2.5 times larger than the 2.25 billion covered by the United States.² However, only about a fourth of the land in the Soviet Union is suitable for agricultural use, compared with roughly half in the United States. Thus, the 1.5 billion acres of agricultural land in the U.S.S.R. exceed by only a fourth the 1.2 billion acres of such land in the United States. Nevertheless, the Soviet Union cultivated land area—about 560 million acres—is 45 percent larger than the U.S. cultivated area.

The United States has a more favorable geographical location and better weather conditions for agriculture than does the U.S.S.R. Former U.S.S.R. Minister of Agriculture Vladimir V. Mat-skevich, in an interview published in the January 1973 issue of the Soviet journal *Ogonek*, described some of the differences (25):

U.S. territory lies south of the 49th parallel, while only one-third of the agricultural land in the Soviet Union lies within this zone. In the U.S.S.R., only 1.1 percent of the arable land lies in areas with an annual precipitation of 700 millimeters (28 inches) while in the United States it is 60 percent. . . Here 40 percent of the arable land lies in areas with an annual precipitation of 400 millimeters (16 inches), while in the United States it is 11 percent. . . More than two-thirds of the area sown to grain crops in the U.S.S.R. is located in areas with insufficient precipitation. . . Severe and very severe droughts occur once in 3 years. . . Only about 1 year out of every 3 or 4 can be

considered more or less favorable. . . The temperature ranges are also considerably different. In the U.S.S.R. 60 percent of the arable land lies within areas having an average temperature of 5°C (41°F) or less, while this is true of only slightly more than 10 percent in the United States.

Therefore, in addition to greater drought susceptibility, the U.S.S.R. has a considerably shorter growing season and frost-free period than most areas in the United States.

Labor Forces

The Soviet Union has a population of over 255 million, almost a fifth more than the 215 million people in the United States. About 40 percent of the Soviet population resides in rural areas, compared with about 25 percent in the United States.

The civilian labor force of the U.S.S.R.—roughly 135 million (5)—exceeds that of the United States by about 50 percent. Thus, the Soviet Union has somewhat over half of its people in the labor force, compared with 43 percent for the United States. Also, the proportion of women in the labor force is higher than the 40 percent in the United States. About half of all workers and employees in the U.S.S.R. are women.

These differences in the labor forces in the two countries are probably due in large measure to agricultural employment. Over a fourth of the Soviet labor force is engaged in agriculture, compared with only 4 percent in the United States. Also, women account for about 15 percent of those engaged in agriculture in the United States, compared with about 45 percent in the U.S.S.R. However, the number of nonagricultural workers engaged in activities in support of agricultural workers is much greater in the United States than in the Soviet Union.

²Including Alaska and Hawaii.

AGRICULTURAL SYSTEMS

The agricultural system of the U.S.S.R. is vastly different from that of the United States. Almost all land in the U.S.S.R. is socialized and operated under a central state plan. At the beginning of 1976, there were 28,600 collective farms averaging 6,500 hectares (about 16,100 acres) of agricultural land and 18,100 state farms averaging 19,100 hectares (47,200 acres) of agricultural land (16). By contrast, in the United States there are about 2.8 million farms (mainly operated by farmowners and their families) which cover, on the average, somewhat less than 400 acres (160 hectares) of land.

The state farms occupy about half of the total sown acreage in the U.S.S.R. Most of the remaining acreage is in collective farms. The private sector, only about 3 percent of the sown acreage, consists mainly of small plots, frequently less than half an acre in size. Most of these plots are tilled by collective and state farm members in their spare time. Although these "private" plots constitute a very small portion of the total agricultural land, they account for a large part of the output of selected agricultural commodities. In 1974, for example, 33 percent of the vegetables and 64 percent of the potatoes were produced in the private sector. For livestock products, this proportion was also very high: meat, 32 percent; milk, 32 percent; eggs, 41 percent; and wool, 20 percent (15). However, for livestock products, the private sector depends mainly on the public sector for feed input.

The present Soviet regime is increasing the level of inputs and improving incentives for the rural labor force. These measures include increased supplies of fertilizers, more pesticides and machinery, additional livestock facilities, and expanded irrigation and drainage projects.

The function of management on Soviet and American farms is difficult to compare because of differences in size, organization, and context of the overall economic system. Soviet collective farm chairmen and state farm directors probably bear the closest resemblance to managers of American

corporate-type farms. However, Soviet farm managers are not fully responsible for making economic decisions directly affecting the output and profit of the enterprises. Often, they must respond to directives rather than make independent decisions. Recent increased Soviet interest in cost accounting and profitable farm operations suggests some change toward more managerial autonomy in the actual production process. Much of the pricing and marketing of farm products, however, remains a function of the Soviet Government rather than a function of consumer demand. The U.S. Government helps shape the broad activities of production, marketing, pricing, and trade through extension services, agricultural economic research, and promotion of foreign trade. But, with minor exceptions, U.S. farmers make onfarm decisions.

Although the wide gap between many aspects of U.S. and U.S.S.R. agricultural efficiency, production, and performance has recently been narrowed, several sizable differences still exist, as indicated in the following tables. Farm efficiency, measured in terms of output per unit of input, is substantially higher in the United States than in the U.S.S.R. for land, livestock, and labor. Yields of most crops are lower in the U.S.S.R.

The United States, as indicated above, uses much less labor and land than does the U.S.S.R. but historically has invested more capital to achieve greater output. As a consequence of differences in natural resources, technology, and organization of production, the productivity of U.S. farmworkers is much higher. In a study published in 1972 (12), former Secretary of Commerce Peter G. Peterson found that in the U.S.S.R. one farmworker fed only seven people, while in the United States, a farmworker fed 46. Also, according to the same study, the dollar value of Soviet agricultural output in 1971 was only about 80 percent of the U.S. dollar value, despite greater inputs of land and labor.

COMMODITIES

Grains

Area

Total grain area in the U.S.S.R. is roughly 80 percent larger than that in the United States (table 1). Both countries have been following poli-

cies of expanding grain area during recent years. There is some indication that the Soviets may have reduced too sharply the amount of land left fallow in marginal rainfall regions in order to expand the grain area. Reduced fallow under such conditions could result in lower grain yields and in an increase in the danger of soil erosion.

Table 1--Grain area, United States and Soviet Union, average 1971-75

Grain	: : U.S. <u>1</u> /	: : U.S.S.R.	: : U.S. <u>1</u> /	: : U.S.S.R.	: : U.S.S.R. area : as a percent : of U.S. area
	<u>Mil. ha.</u>		<u>Mil. acres</u>		<u>Percent</u>
Wheat:					
Winter	16.5	18.5	40.9	45.7	112
Spring	6.6	43.0	16.3	106.3	652
Total	23.1	61.5	57.2	152.0	266
Rye .....	.5	8.5	1.1	21.0	1,700
Barley	4.2	28.3	10.3	69.9	674
Oats	8.0	11.3	19.7	27.9	141
Corn	25.5	3.6	63.1	8.9	14
Rice .....	.9	.5	2.2	1.2	56
Others	<u>2/6.1</u>	<u>3/10.3</u>	<u>2/15.0</u>	<u>3/25.5</u>	169
Total grain :	68.3	124.0	168.6	306.4	182

1/ Seeded area for spring wheat, spring barley, and oats which is more comparable to Soviet area data for these grains than harvested acreage.

2/ Grain sorghum.

3/ Millet, buckwheat, other minor grains, and pulses (which the Soviets include with grain).

Sources: (15, 19, 23).

There is a sharp contrast in the type of grain grown in the United States and the U.S.S.R. (fig. 1). The food grains—wheat, rye, buckwheat, and rice—account for 58 percent of the total Soviet grain area but for only 36 percent of U.S. grain acreage. Wheat alone occupies 50 percent of the grain area in the U.S.S.R. In the United States, corn accounts for 37 percent of the grain acreage but is followed closely by wheat, with 34 percent of the total.

The more northern location of the major agricultural regions of the Soviet Union is reflected by the types of wheat grown. Winter wheat accounts for only 30 percent of the total wheat area in the U.S.S.R. but for over 70 percent of the total in the United States. Nevertheless, the Soviet winter wheat area is somewhat larger than the U.S. area. However, the winter wheat areas are relatively far

north in the Soviet Union and the winter wheat is often hit heavily by winterkill.

Yields

Average Soviet grain yields, even in bunker-weight terms, are less than half those in the United States (table 2), reflecting differences in types of grain grown, levels of technology, geographic location, and economic systems. The relative importance of U.S. corn versus Soviet spring wheat in the overall yield comparison is reflected by the fact that for most of the individual grains, U.S.S.R. yields are two-thirds or more of U.S. yields. However, Soviet winter wheat and oat yields are slightly higher than those in the United States, while Soviet corn yields are only about half as high (fig. 2).

GRAIN YIELDS

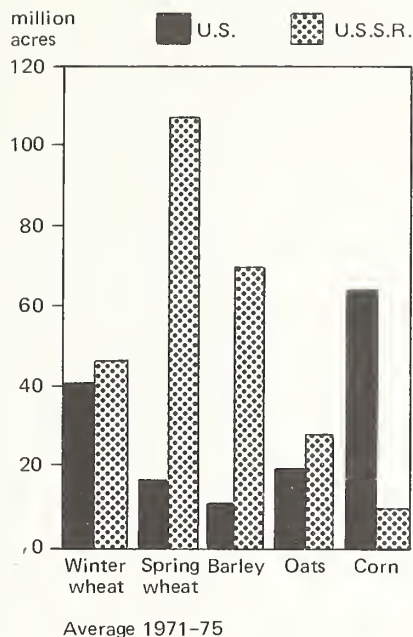


Figure 1

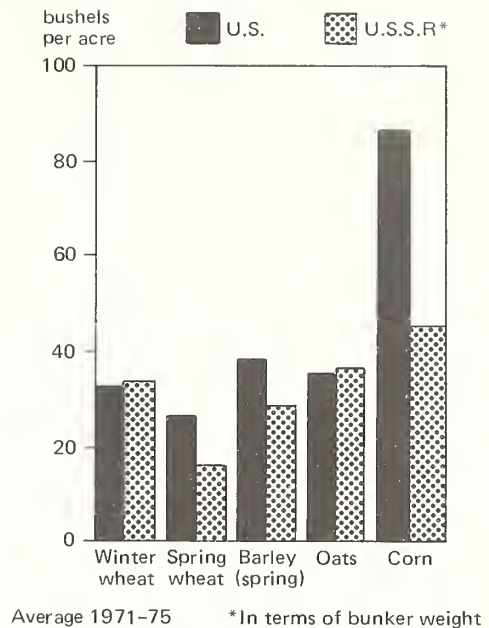


Figure 2

Table 2--Grain yields, United States and Soviet Union, average 1971-75

Grain	U.S. <u>1/</u>	U.S.S.R. <u>1/2/</u>	U.S.	U.S.S.R. <u>2/</u>	U.S.S.R. yields as a percent of U.S. yields
	<u>Qu./ha.</u>		<u>Bu./acre</u>		<u>Percent</u>
Winter wheat	21.9	22.4	32.5	33.3	102
Spring wheat	17.8	11.0	26.4	16.4	62
Winter rye	16.0	13.5	25.5	21.5	84
Barley	20.8	15.3	38.7	28.4	74
Oats	12.8	13.1	35.6	36.5	102
Corn	54.3	28.3	86.5	45.1	52
Rice	51.4	34.0	<u>3/45.9</u>	<u>3/30.3</u>	66
Total grain	33.8	14.6	--	--	43

-- = Not applicable.

1/ Calculated using area data from table 1 and production data from table 3 (hectares and metric tons for the U.S.S.R. and acres and bushels for the United States).

2/ In terms of bunker weight--the grain's weight as it comes from the combines.

3/ In terms of hundredweight per acre.

Grain yield variability during 1971-75 was much greater in the U.S.S.R., largely because of the severe 1975 drought. The difference between the low and high grain yields in the 5 years was almost 30 percent in the United States but over 60 percent in the Soviet Union. For individual grains, yield variability was greatest in both countries for spring wheat and, because of irrigation, least for rice. The variability in corn yields was about the same in both countries.

The peak overall U.S. grain yield in the past 5 years was in 1972, when corn yield was a record, and the low yield was in 1974. Yields of U.S. grain other than corn were the highest in 1971. For the U.S.S.R., 1973 was a record year for grain yields, both for grain as a whole and for most individual grains, while the extreme drought in 1975 caused grain yields to fall to unusually low levels.

Production

U.S. grain production is over a fourth larger than Soviet bunker-weight grain output (table 3), although Soviet grain area is over 80 percent larger than the U.S. grain area. The major reason for this seemingly contradictory situation is that high-yielding corn accounts for 60 percent of total U.S. grain production, while relatively low-yielding wheat (primarily spring wheat) accounts for almost half of the Soviet grain crop. The U.S.S.R. produces close to half again as much oats as the United States, almost twice as much wheat, about five times as much barley, and over 16 times as much rye (fig. 3). On the other hand, U.S. corn output is over 13 times as much as in the Soviet Union, and rice output is almost three times as great.

Table 3--Grain production, United States and Soviet Union, average 1971-75

Grain	U.S.	U.S.S.R. <u>1/</u>	U.S.	U.S.S.R. <u>1/</u>	U.S.S.R. production as a percent of U.S. production
	Mil. MT		Mil. bu.		Percent
Wheat:					
Winter	36.2	41.5	1,329	1,525	115
Spring	11.7	47.4	431	1,741	405
Total	47.9	88.9	1,760	3,266	186
Rye	0.7	11.5	28	453	1,643
Barley	8.7	43.3	399	1,989	498
Oats	10.2	14.8	702	1,019	145
Corn	138.6	10.2	5,458	402	7
Rice	4.6	1.7	<u>2/</u> 101	<u>2/</u> 37	37
Others	<u>3/</u> 20.3	<u>4/</u> 11.1	<u>3/</u> 800	--	55
Total grain ...	231.0	181.5	--	--	79

-- = Not applicable.

1/ In terms of bunker weight--the grain's weight as it comes from the combines.

2/ In terms of million hundredweights.

3/ Grain sorghum.

4/ Millet, buckwheat, other minor grains, and pulses (which the Soviets include with grain).

Sources: (15, 19).

The dominance of feed grains in U.S. grain production is even more pronounced than indicated by the acreage data. Feed grains account for over three-fourths of U.S. grain output, compared with less than half of the Soviet crop. However, in both countries sizable quantities of food grains, particularly the lower quality grains, are also used as livestock feed.

Variability in total Soviet grain production during 1971-75 was much larger than in the United States. The very poor 1975 Soviet crop, at 140 million metric tons, was 37 percent less than the 1973 record harvest of almost 223 million metric tons. In the United States, the relatively poor 1974 grain harvest was 204 million metric tons, only 18 percent below the good 248-million-ton harvest in 1975. Also, variability in the output of individual grains in the U.S.S.R. was generally greater than in the United States.

The Soviet grain production target for 1976-80 (the Tenth Five-Year Plan period) is for an average annual output of 215-220 million metric tons. A projection of the 1955-74 trend in Soviet grain yields suggests that this goal could be attained from an area of about 125 million hectares, several million less than that occupied by grain in the past several years. The 1976-80 grain goal is 33.5-38.5 million metric tons, or 18-21 percent, higher than the average 1971-75 Soviet harvest,

but would still fall 5-7 percent short of the average 1971-75 U.S. grain crop.

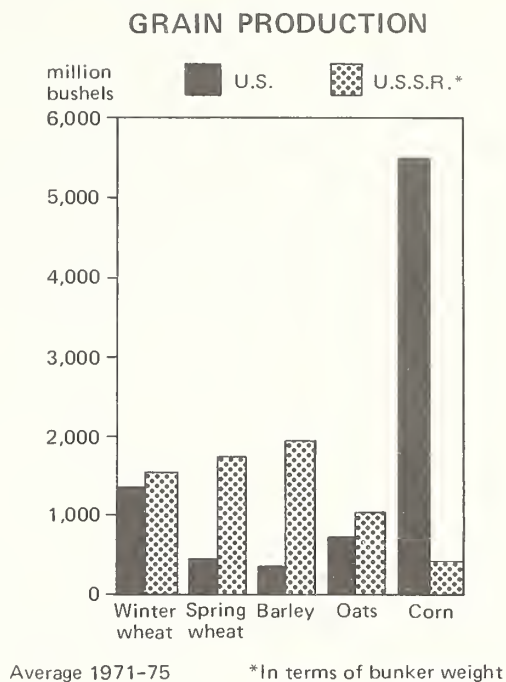


Figure 3

Utilization

Total availability of grain for domestic utilization during 1971-75 was about equal—205 million metric tons in the United States and an estimated 206 million in the Soviet Union (table 4). Beginning U.S. grain stocks in this period averaged 30 million metric tons larger than (three times as large as) estimates of such stocks in the U.S.S.R. Also, U.S. grain production in 1971-75 averaged 50 million tons more than the Soviet grain crops. This 80-million-ton U.S. grain advantage was eliminated through trade, with the United States being a net exporter of 69 million tons of grain and the U.S.S.R. a net grain importer of 11 million tons.

There are great differences between domestic utilization of grain in the United States and that estimated for the Soviet Union. The United States uses only about half as much grain for food as does the U.S.S.R. but almost a fourth more grain for livestock feed. U.S. industrial use of grain is almost three times as much as in the U.S.S.R. The Soviets use almost seven times as much grain for seed as do U.S. farmers. This is attributable to heavy Soviet seeding rates, to the larger Soviet grain area, and to the large U.S. corn area. Waste is estimated at 5 percent of U.S. grain production but, because of the bunker-weight concept, at about 10 percent of Soviet grain crops.

Table 4--Grain utilization, United States and Soviet Union, average 1971-75

Item	U.S.	U.S.S.R.	U.S.S.R. utilization as a percent of U.S. utilization
	Million MT		Percent
Beginning stocks	43	1/14	33
Production	231	181	78
Trade:			
Imports	2/	15	3,000
Exports	69	4	6
Net trade	-69	+11	
Availability	205	206	100
Utilization:			
Seed	4	27	675
Industrial uses	8	3	38
Food	23	45	196
Feed	120	98	82
Waste	3/12	20	167
Total	167	193	116
Ending stocks	38	13	34

1/ Minimum pipeline stocks on July 1, 1964 are assumed to have been 4 million tons.

2/ Less than 500,000 tons.

3/ Estimated at 5 percent of U.S. grain production.

Sources: (1) and unpublished ERS working materials.

Table 5--Production of selected nongrain crops, United States and Soviet Union, average 1971-75

Crop	U.S.	U.S.S.R.	U.S.S.R. production as a percent of U.S. production
	Million metric tons		Percent
Fruit ^{1/}	21.2	11.9	56
Vegetables	20.8	22.7	109
Potatoes	14.3	89.7	627
Sugar (raw value)	5.4	2/8.4	156
Cotton	3/2.5	3/2.5	100
Tobacco .....	.9	.3	33
Soybeans	36.6	.5	1
Sunflowerseeds .....	.3	6.0	2,000
Hay	118.4	82.2	69

^{1/} Including grapes--U.S., 3.5 million tons and U.S.S.R., 4.3 million tons.

^{2/} Does not include production of refined sugar from imported raw, i.e. refined beet sugar output converted to raw value at the rate of .92 of refined to 1.0 of raw.

^{3/} Equal to 11.5 million 480-pound (net weight) bales.

Sources: (8, 15, 19, 23).

Nongrain Crops

Production of nongrain crops in the United States and the Soviet Union is substantially different (table 5). The output of cotton (all irrigated in the U.S.S.R.) and vegetables is about the same in the two countries, but a wider variety of vegetables is produced in the United States. The U.S.S.R. produces over six times as many potatoes but only a little over half as much fruit, which reflects differences in food consumption patterns in the two countries.

Production of soybeans, the major U.S. oilseed, is very small in the Soviet Union. Production of sunflowerseeds, the principal Soviet oilseed, is negligible in the United States. The Soviets pro-

duce 56 percent more sugar (all from beets) than the United States does but only a third as much tobacco and about 70 percent as much hay.

The Soviets plan substantial increases during 1976-80 in production of nongrain crops. Based on available information, planned cotton production is to average 8.5 million tons of raw seed cotton, or 11 percent more than in 1971-75. Increases of 25 percent or more are called for in sunflowerseed output (to an average of 7.6 million tons) and in sugarbeet production (95-98 million tons). Increases in output of fruit, vegetables, and potatoes apparently are also planned. At least, the collective and state farms are to supply 17 million tons of vegetables to state retailing and processing enterprises, 30 percent more than was supplied in 1971-75.

Livestock

Numbers

U.S. and Soviet livestock herds are both large. U.S. cattle numbers are 15 percent larger than Soviet cattle numbers (table 6). On the other hand, Soviet hog numbers exceed those in the United States by a similar amount. Also, the Soviets have eleven times as many sheep and lambs.

The United States has about 55 million cows or about a third more than the Soviet Union (fig. 4). However, about three-fourths of the cows in the United States are range or stock cows for beef production and only about a fourth are dairy cows. A large portion of the Soviet cows are dual purpose rather than strictly dairy cows, but most of them are milked.

Livestock numbers increased somewhat more during 1971-75 in the Soviet Union than they did in the United States. Both countries realized a 12-percent increase in cattle numbers during the 5-year period. However, the United States experienced very sharp decreases in hog and sheep and lamb numbers. The U.S.S.R. also had a sharp decrease in hog numbers but a moderate increase in sheep and lamb numbers.

The change in cattle herds in both countries probably reflects a continuation of long-term trends. However, the sharp decrease in hog numbers in the United States primarily reflected the change from the top to a deep bottom in the U.S. hog cycle. In the Soviet Union, the decline reflected a sharp increase in hog slaughtering last year because of the disastrous 1975 drought.

Meat, Dairy, and Poultry Products

Soviet production of meat and eggs is about two-thirds to three-fourths as much as output in the

United States (table 7). The meat production data relative to livestock numbers demonstrate the higher productivity of U.S. animals. Soviet beef and veal production per head of cattle is only about two-thirds of U.S. output per head, while Soviet pork output per hog is four-fifths that in the United States. Also, with eleven times as many sheep and lambs, Soviet production of mutton and lamb (and also wool) is only five times as much as in the United States. U.S. output of poultry meat, about 3.5 times the U.S.S.R. level, probably reflects the stages of development of commercial poultry raising in the two countries (fig. 5).

Soviet milk production is over 1.5 times U.S. milk output, and the Soviets produce three times as much butter. However, milk yield per cow milked in the United States is somewhat more than twice as much as in the U.S.S.R. This yield discrepancy is mainly due to the fact that dual purpose breeds comprise most of the cows milked in the Soviet Union, while in the United States, most cows milked are dairy breeds.

Soviet livestock product output is planned to increase during 1976-80, but at a relatively slow rate. Meat output is to average 15-15.6 million tons or about 7-11 percent more than the average realized during 1971-75. The production targets of an average of 94-96 million tons of milk and 58-61 billion eggs would represent increases of 7-10 percent and 13-18 percent, respectively. Given a population growth rate of about 1 percent annually, or about 5 percent for the 5-year period, the annual per capita increase in availability of livestock products from planned domestic production would be 1 percent or less for meat and milk and 3 percent or less for eggs. Such small increases should generate much popular pressure on Soviet officials to exceed these planned goals.

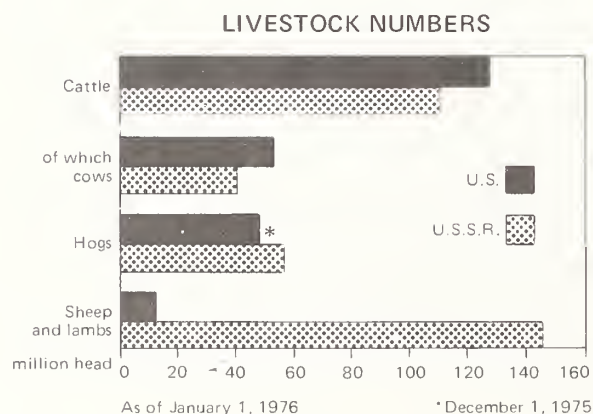


Figure 4

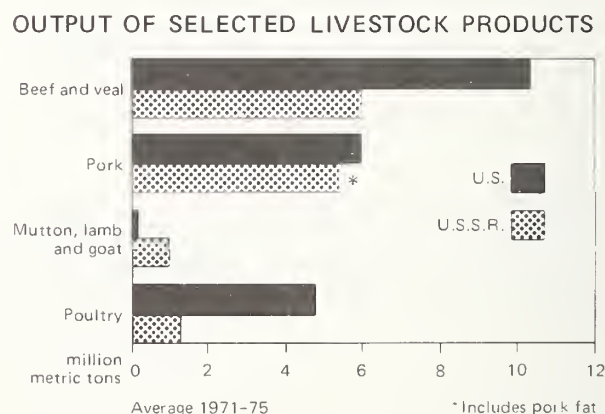


Figure 5

Table 6--Livestock numbers, United States and Soviet Union
Jan. 1, 1971 and 1976

Livestock	U.S.		U.S.S.R.		Percentage change between 1971 and 1976		January 1, 1976 U.S.S.R. numbers as a percent of U.S. numbers
	1971	1976	1971	1976	U.S.	U.S.S.R.	
	<u>Million head</u>				<u>Percent</u>		
Cattle	114.6	128.0	99.2	111.0	+12	+12	87
Cows <u>1/</u>	49.8	54.8	39.8	41.9	+10	+5	76
Hogs <u>2/</u>	67.4	49.6	67.5	57.8	-26	-14	117
Sheep and lambs	19.7	13.3	138.0	146.9	-32	+6	1,105

1/ Milk cows account for only 20-25 percent of U.S. cows.

2/ December 1 numbers of preceding year for the U.S.

Sources: (15, 18, 20, 22, 23).

Table 7--Production of selected livestock products, United States and Soviet Union, average 1971-75

Commodity	U.S.		U.S.S.R.		U.S.S.R. production as a percent of U.S. production
	<u>Million metric tons</u>				<u>Percent</u>
Beef and veal	10.4		6.0		58
Pork	6.0		<u>1/</u> 5.5		92
Mutton, lamb, and goat .....	.2		1.0		500
Poultry	4.8		1.3		27
Total meat <u>2/</u>	21.4		13.8		64
Cows' milk	53.1		<u>3/</u> 87.5		165
Butter .....	.4		1.3		325
Wool (greasy basis) .....	.1		.5		500
	<u>Billion eggs</u>				
Eggs	67.4		51.5		76

1/ Includes pork fat.

2/ Sum of meats listed above.

3/ Includes 1 to 2 percent of milk other than cows' milk.

Sources: (15, 21, 23, 24).

Per Capita Output

The United States produces more than a metric ton of grain per person, while the U.S.S.R. has achieved only about three-fourths of its stated goal of producing a ton of grain per person (table 8). Per capita production of corn is almost 1,500 pounds in the United States, compared with less than 100 pounds in the Soviet Union. This undoubtedly goes far in explaining why U.S. meat output per person is almost twice that in the Soviet Union. This difference is also why roughly a third of the wheat produced in the U.S.S.R. apparently is fed to livestock, although poor quality is probably also a factor in such utilization. However, barley is and probably will remain the principal feed grain in the Soviet Union. Also, a lot of potatoes are used

for livestock feed in the U.S.S.R., which helps explain why Soviet potato output per person is five times that in the United States.

Both the United States and the U.S.S.R. generally have adequate food supplies in terms of calories per person, but the composition of the respective diets differs greatly. The differences are reflected in table 8. Per capita output of fruit, meat, and corn (for livestock feed) are much higher in the United States. On the other hand, per capita output of wheat and potatoes, items generally associated with a relatively low-quality diet, are much higher in the Soviet Union. A Soviet citizen consumes over two times as many cereal products, potatoes, and fish as his U.S. counterpart. However, Soviet milk output per capita is higher.

Table 8--Per capita output of selected agricultural commodities, United States and Soviet Union, average 1971-75 1/

Commodity	U.S. <u>2/</u>	U.S.S.R. <u>2/</u>	U.S.	U.S.S.R.	U.S.S.R. output as a percent of U.S. output
	<u>Kilograms</u>		<u>Pounds</u>		<u>Percent</u>
Grain	1,098	727	2,421	1,603	66
Wheat	228	356	503	785	156
Corn	659	41	1,453	90	6
Fruit	101	48	223	106	48
Vegetables	99	91	218	201	92
Potatoes	68	359	150	791	528
Sugar	26	34	57	75	131
Meat	102	55	225	121	54
Beef and veal ...	49	24	108	53	49
Pork	29	22	64	49	76
Poultry meat ...	23	5	51	11	22
Milk	252	350	556	772	139
Eggs	<u>3/320</u>	<u>3/206</u>	<u>3/320</u>	<u>3/206</u>	64

1/ Average July 1, 1971-75 populations were as follows: U.S., 210.3 million and U.S.S.R., 249.7 million.

2/ Calculated from data in tables 3, 5, and 7.

3/ Number of eggs.

AGRICULTURAL INPUTS

Mineral Fertilizers

The large gap that once existed between use of mineral fertilizers in the Soviet Union and the United States is rapidly closing. During the past 10 years, the use of mineral fertilizers in the United States has increased by somewhat more than half, while in the Soviet Union such use has increased almost threefold, but, of course, from a smaller base.

During 1971-75, however, the Soviets' use of mineral fertilizers was still roughly 10-15 percent less than consumption in the United States (table 9). Soviet nitrogen fertilizer use was 82 percent of that in the United States, while Soviet phosphate use equaled 93 percent of U.S. utilization. For potash, the figure was 89 percent. The comparison is less favorable when fertilizer use per acre of arable land is calculated since the cultivated area in the Soviet Union is 45 percent larger than that in the United States. Soviet farmers use only about 57 percent (for nitrogen) to 64 percent (for phosphates) as much mineral fertilizers per acre of arable land as do U.S. farmers.

Soviet production and use of mineral fertilizers has been increasing rapidly in recent years and is planned to increase sharply in the years ahead. The depressed level of U.S. fertilizer use in 1974/75 was only 2 percent higher than the amount used 4 years earlier while the record level of Soviet fertilizer use during 1975 was over 50 percent greater

than that in 1971. In fact, Soviet fertilizer use in 1975 was about equal to the total amount used in the United States in 1973/74 and 10 percent greater than the depressed 1974/75 level.

By 1980, mineral fertilizer use per acre sown to crops in the Soviet Union may be equal to or greater than that in the United States. The Tenth 5-Year Plan calls for Soviet agriculture to receive in 1980 almost double the amount of mineral fertilizers received during 1971-75,—that is, roughly 26-27 million tons of plant nutrients. If Soviet fertilizer deliveries to agriculture are fulfilled, and if the total crop areas in the two countries remain basically unchanged, the rate of use in the Soviet Union would be one-eighth above the average 1971-75 U.S. level.

Farm Equipment

Agriculture in the United States is much more mechanized than in the Soviet Union. The U.S.S.R. has less than half as many tractors and trucks on farms but over 90 percent as many grain combines as the United States (table 10 and fig. 6). The comparison is even less favorable if based on area per machine. In the U.S.S.R., there is one tractor for each 265 acres of cultivated land, while in the United States, there is one for every 88 acres. For grain combines, there is a similar situation—almost 460 acres of small grains (excluding corn) per combine. In the United States, the area is about 150 acres per combine.

Table 9--Utilization of mineral fertilizers, United States and Soviet Union, 1/ average 1971-75

Fertilizer	U.S. <u>2/</u>	U.S.S.R. <u>3/</u>	U.S.S.R. utilization as a percent of U.S. utilization
	Million metric tons		Percent
Nitrogen (N)	7.65	6.25	82
Phosphate (P ₂ O ₅)	4.42	4.12	93
Potash (K ₂ O)	4.11	3.67	89
Total	16.18	14.04	87

1/ In terms of available plant nutrients.

2/ July 1-June 30, 1970/71-74/75.

3/ Jan. 1-Dec. 31, 1971-75.

Source: (6, 7, 15, 16).

Table 10--Agricultural equipment on farms, United States and Soviet Union, average, Jan. 1, 1971-75

Category	U.S.	U.S.S.R.	U.S.S.R. equipment as a percent of U.S. equipment
	<u>Million units</u>		<u>Percent</u>
Tractors	<u>1</u> /4.41	2.12	48
Trucks	2.92	1.23	42
Grain combines .....	.71	.65	92

1/ Excludes garden tractors.

Sources: (15, 23, 24).

The size and power of agricultural machines in both countries are increasing. Soviet tractors average 60 horsepower, about a fourth more than that of the average U.S. tractor. The rate at which average horsepower per tractor is increasing is about the same in the two countries.

Soviet tractors apparently have a rather short use-life. Between 1970 and 1975, the total number of tractors in Soviet agriculture increased by roughly 400,000 to a total of 2.4 million. However, the number of tractors delivered to Soviet agriculture during 1971-75 totaled almost 1.7 million. Thus, about 260,000 tractors were discarded each year, indicating an average use-life of a Soviet tractor of 8-9 years.

During 1976-80, Soviet agriculture is to receive 1.9 million tractors, as well as 1,350,000 trucks and 538,000 grain combines. In 1971-75, 1,102,000 trucks and 449,000 grain combines were delivered to Soviet agriculture.

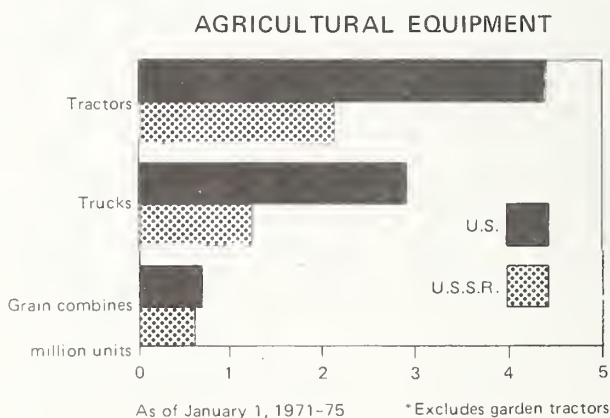


Figure 6

FOREIGN TRADE

The relative importance of agricultural products in the foreign trade of both countries is roughly the same—almost one-sixth. However, the United States traditionally is a net exporter of agricultural products, and the Soviet Union is a net importer. Nevertheless, in 1974 U.S. agricultural imports were about twice as large as such imports by the Soviet Union while for agricultural exports the United States out-distanced the USSR by eightfold. The United States is the world's largest exporter and one of the largest importers of agricultural products. In 1974, the Soviet Union ranked seventh as an agricultural importer and tenth as an exporter of agricultural products.

Grain

Since 1971 the U.S.S.R., in contrast to its usual pattern, has been a net grain importer. During 1970-74, wheat and wheat flour accounted for 85 percent of Soviet grain exports and for 58 percent of grain imports (table 11). The grain imported by the Soviet Union has been used primarily for feed to help implement an ambitious livestock development program. Most Soviet grain exports are made in fulfillment of bilateral trade agreements, mainly with East European countries.

The United States, on the other hand, is almost exclusively a grain exporter, and exports during 1970-74 were over seven times as large as Soviet

grain exports. Wheat accounted for 45 percent of U.S. grain exports, followed by corn at about 40 percent.

The grain trade of both the United States and the Soviet Union fluctuated widely during 1970-74. The record 82.4 million tons of U.S. grain exported in 1973 was more than double the 36.0 million tons exported in 1971. The 1973 peak in U.S. grain exports coincided with record imports of 24.4 million tons by the Soviet Union—this record in turn was almost nine times as large as the low for the period of 2.8 million tons imported by the Soviets in 1970. The range from low to high in Soviet grain exports during 1970-74 was 88 percent, from 5.1 million tons in 1972 to 9.6 million in 1971.

The Soviet Union has become an important, although an extremely variable, market for U.S. grain in recent years (table 12). U.S. grain exports to the Soviet Union have ranged from lows of 2-3 million tons in 1971/72 and 1974/75 to highs of about 14 million tons in 1972/73 and 1975/76. Corn has accounted for a little over half of all U.S. grain exported to the U.S.S.R. during the past 5 years, with wheat accounting for most of the remainder. The U.S.-U.S.S.R. grain purchase agreement signed in Moscow on October 20, 1975, should help reduce the volatile nature of the grain market since the Soviets are obligated to purchase a minimum of 6 million tons of U.S. wheat and corn in each of the next 5 years.

Table 11--Grain trade, United States and Soviet Union, average 1970-74

[illegible]

-- = Negligible.

Source: (9).

Other Agricultural Products

U.S. and Soviet trade in certain nongrain agricultural products in 1970-74 displayed some unusual patterns, considering levels of domestic production in the countries. The United States was a much larger net importer of meat than was the U.S.S.R. (table 13), although U.S. meat production per capita was almost double that in the Soviet Union. On the other hand, the Soviets imported over three times as much wool as did the United States, although Soviet wool production was five

times greater than U.S. wool production. Soviet oilseed cake exports were negligible compared with the large U.S. exports, but the U.S.S.R. has become a net importer of oilcake to help provide the additional protein needed to improve the quality of Soviet livestock feed.

The United States was a much larger net exporter of cotton, although production in the two countries was about equal. Both countries were large sugar importers, but the U.S.S.R. was also a significant sugar exporter.

Table 13--Trade in selected nongrain agricultural commodities, United States and Soviet Union, 1970-74

Commodity	Exports		Imports	
	U.S.	U.S.S.R.	U.S.	U.S.S.R.
	<u>1,000 metric tons</u>			
Cotton, lint	946	636	10	188
Wool, washed	2	12	13	43
Meat	256	44	616	198
Tobacco, unmf.	259	2	130	81
Pulses	313	75	22	--
Sugar, raw	14	493	4,864	2,205
Butter	14	30	5	50
Oilseed cake	4,360	9	20	100

-- = Negligible.

Source: (9).

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